Release notes for ENDF/B Development n-004_Be_009 evaluation

April 26, 2017

- `fizcon` Errors:

    1. The cross section and an outgoing distribution don't span the same energy region.
       MAT= 425, MF= 6, MT= 16 (1): Diff limits (a)

       ```
       ERROR(S) FOUND IN MAT= 425, MF= 6, MT= 16
           SECTION DOES NOT SPAN THE SAME ENERGY RANGE AS FILE   3, MT=  16
       ```

- `fudge-4.0` Warnings:

    1. Cross section does not match sum of linked reaction cross sections
       crossSectionSum label 0: total (Error # 0): CS Sum.

       ```
       WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 2.13%
       ```

    2. Cross section does not match sum of linked reaction cross sections
       crossSectionSum label 1: nonelastic (Error # 0): CS Sum.

       ```
       WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 35.97%
       ```

    3. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
       Section 0 (total): / Form 'eval': (Error # 0): Condition num.

       ```
       WARNING: Ratio of smallest/largest eigenvalue (5.844123e-09) is too small
       ```

    4. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
       Section 2 (n[multiplicity:'2'] + He4[multiplicity:'2']): / Form 'eval': (Error # 0): Condition num.

       ```
       WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
       ```

    5. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
       Section 4 ((z,p)): / Form 'eval': (Error # 0): Condition num.

       ```
       WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
       ```

    6. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
       Section 5 ((z,d)): / Form 'eval': (Error # 0): Condition num.

       ```
       WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
       ```

    7. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
       Section 6 ((z,t)): / Form 'eval': (Error # 0): Condition num.

       ```
       WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
       ```

    8. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
       Section 7 ((z,alpha)): / Form 'eval': (Error # 0): Condition num.

1

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

9. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
   Section 11 (H3 + (Li7_e1 ->Li7 + photon)): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

- `fudge-4.0` Errors:

  1. Calculated and tabulated Q values disagree.
     reaction label 1: n[multiplicity:'2'] + He4[multiplicity:'2'] (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -3603524.458434105 eV vs -1.5728e6 eV!
     ```

  2. Energy range of data set does not match cross section range
     reaction label 1: n[multiplicity:'2'] + He4[multiplicity:'2'] / Product: n / Distribution: / angularEnergy - XYs3d: (Error # 0): Domain mismatch (a)

     ```
     WARNING: Domain doesn't match the cross section domain: (1749400.0 -> 20000000.0) vs (1748830.0 -> 20000000.0)
     ```

  3. Energy range of data set does not match cross section range
     reaction label 1: n[multiplicity:'2'] + He4[multiplicity:'2'] / Product: He4 / Distribution: / angularEnergy - XYs3d: (Error # 0): Domain mismatch (a)

     ```
     WARNING: Domain doesn't match the cross section domain: (1749400.0 -> 20000000.0) vs (1748830.0 -> 20000000.0)
     ```

  4. Calculated and tabulated Q values disagree.
     reaction label 2: H1 + Li9 (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -13323838.08342934 eV vs -1.283e7 eV!
     ```

  5. Calculated and tabulated Q values disagree.
     reaction label 3: H2 + Li8 (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -15158809.19356251 eV vs -1.466e7 eV!
     ```

  6. Calculated and tabulated Q values disagree.
     reaction label 4: H3 + Li7 (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -10930764.61588192 eV vs -1.044e7 eV!
     ```

  7. Calculated and tabulated Q values disagree.
     reaction label 5: H3 + (Li7_e1 ->Li7 + photon) (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -11408764.61588192 eV vs -1.0918e7 eV!
     ```

  8. Calculated and tabulated Q values disagree.
     reaction label 6: He4 + He6 (Error # 0): Q mismatch

     ```
     WARNING: Calculated and tabulated Q-values disagree: -2626371.757580757 eV vs -6.e5 eV!
     ```

- `njoy2012` Warnings:

1. This nuclide has no URR and NJOY is upset about it
   unresr...calculation of unresolved resonance cross sections (0): No URR

   ```
    ---message from unresr---mat  425 has no resonance parameters
                       copy as is to nout
   ```

2. This nuclide has no URR and NJOY is upset about it
   purr...probabalistic unresolved calculation (0): No URR

   ```
    ---message from purr---mat  425 has no resonance parameters
                     copy as is to nout
   ```

- `xsectplotter`   Errors:

   1. Exception AttributeError was thrown
      (Error # 3): AttributeError

      ```
      AttributeError: 'str' object has no attribute 'name'
      ```